5.16 OTHER WATER QUALITY PROBLEMS

Fertilizer Use

Water quality problems and control measures associated with fertilizer use are discussed in the section on agriculture in Chapter 4 of this Basin Plan. However, fertilizer use on golf courses, other large turf areas, and in home landscaping is of special concern in relation to the sensitive surface waters of the Lake Tahoe Basin. Nutrients in fertilizer can reach surface waters through stormwater or by percolation through ground water, and can contribute to eutrophication. Nitrogen from fertilizer which accumulates in ground water can contribute to violation of the drinking water standard. Fertilizer impacts can occur cumulatively with nutrient loading from other sources such as urban runoff.

As noted in the section of this Chapter on golf courses, the Regional Board has placed all golf courses on the California side of the Lake Tahoe under waste discharge requirements which include conditions related to fertilizer management. Other types of projects involving significant fertilizer use should be considered for similar types of permits.

The 208 Plan (TRPA 1988, Vol. I, page 95) states that, while the use of fertilizer may be necessary in some applications, such as establishing erosion control vegetation, management practices are necessary to limit the addition of fertilizer which may leach from the soil and become a component of runoff waters. The 208 Plan (Vol. I, page 139) provides that the use of fertilizer in within the Tahoe Region shall be restricted to uses, areas, and practices identified in the Best Management Practices Handbook.

The BMP Handbook (TRPA 1988, Vol. II, BMP63) states that fertilizer use, except as necessary to establish and maintain plants, is not recommended in the Tahoe Basin; that fertilizers shall not be used in or near stream channels and in the shorezone areas; and that fertilizer use shall be lowered in stream environment zones and eliminated if possible. This BMP includes discussion of appropriate fertilizer types and practices. It states that maintenance applications of fertilizers should be made when loss of vigor or slow growth indicates a possible nutrient deficiency. At least one additional application is required following the original grass seeding and should be applied in the spring immediately following snow melt.

Revegetation of disturbed sites requires the use of species approved by TRPA; lists of approved species are included in the BMP Handbook (BMP55, BMP56, BMP57,and BMP58). The 208 Plan directs TRPA to prepare specific policies designed to avoid the unnecessary use of landscaping which requires long-term fertilizer use.

According to the TRPA Code of Ordinances, projects that include landscaping or revegetation shall, as a condition of approval, be required to prepare fertilizer management plans that address: the appropriate type of fertilizer to avoid the release of excess nutrients, the rate and frequency of application, appropriate watering schedules; preferred plant materials, landscape design that minimizes the impacts of fertilizer applications, critical areas, the design and maintenance of drainage control systems, and surface and ground water monitoring programs, where appropriate.

Because of the large number of potential sites where property owners or managers may wish to apply fertilizer, and the ready availability of fertilizer from commercial outlets, public education is a very important aspect of the 208 Plan's implementation program for fertilizer management BMPs. The 208 Plan states that TRPA shall emphasize fertilizer management in its public education program, and shall make educational materials such as the Guide to Fertilizer Use in the Lake Tahoe Basin (TRPA 1987) available to the widest possible audience.

At the request of TRPA, uses that require regular fertilizer maintenance, (e.g., golf courses, parks, cemeteries, ball fields, and residential yards) are required to submit fertilizer management programs for review and approval by TRPA. Failure to comply may result in remedial action under Chapter 9 of the TRPA Code of Ordinances. Large users of fertilizer, as identified by TRPA shall initiate a tracking program to monitor fertilizer use on lands under their control. Such users shall present annual reports to TRPA, including information on the rate, amount, and location of use (TRPA 1988, Vol. I, page 140). The 208 Plan also directs the states of California and Nevada to continue to issue waste discharge permits for large fertilizer users.

In planning for compliance with municipal stormwater permits, local governments in the Lake Tahoe Basin should consider control of cumulative nutrient contributions from urban fertilizer use. Areawide landscape design guidelines should be revised to emphasize low maintenance plant species rather than turf and other fertilizer intensive plantings. Since they have negligible capital costs and may actually reduce operating costs, fertilizer management practices are cost-effective means of protecting water quality.

Local government ordinances requiring the use of drought-tolerant landscaping (xeriscaping) may, by encouraging the use of native plants, result in lower urban fertilizer use. Educational programs promoting xeriscaping should also emphasize BMPs for fertilizer use.

Pesticides

Although there is no agricultural use of pesticides in the Lake Tahoe Basin, potential water quality problems from pesticide use in landscaping, turf management, silviculture, and wood preservatives are of concern. High levels of tributyltin (TBT), an antifouling compound formerly used in boat paint, have been measured in and near a marina in Lake Tahoe. Rotenone has been used for fisheries management in some waters of the Tahoe Basin.

Regionwide water quality objectives for pesticides, and related objectives for nondegradation and toxicity, essentially preclude direct discharges of pesticides such as aquatic herbicides. The Lahontan Regional Board's regionwide control measures for pesticides, discussed in Chapter 4 of this Basin Plan, are applicable in the Lake Tahoe Basin.

The 208 Plan (TRPA 1988, Vol. I, page 102) notes that because of its harsh climate, short growing season, and high elevation, the Lake Tahoe Basin has fewer insect and fungal pests than many other areas in California and Nevada; however, there is some pesticide use for silviculture and turf management. The 208 Plan recognizes that controls are needed on the use of pesticides to ensure that detectable levels of toxic substances do not migrate into the surface or ground waters of the region, but also recognizes the possibility of limited exceptions for the use of rotenone in fisheries management.

The 208 Plan states (Vol. I, page 154) that the use of insecticides, fungicides, and herbicides shall be consistent with the BMP Handbook (TRPA 1988, Vol. II), and that TRPA shall discourage pesticide use for pest management. Prior to applying any pesticide, potential users shall consider integrated pest management (IPM) practices, including alternatives to chemical applications, management of forest resources in a manner less conducive to pests, and reduced reliance on potentially hazardous chemicals.

The 208 Plan provides that only chemicals registered with the USEPA and the state agency of appropriate jurisdiction shall be used for pest control, and then only for their registered application. No detectable concentration of any pesticide shall be allowed to enter any SEZ unless TRPA finds that the application is necessary to attain or maintain its “environmental threshold carrying capacity” standards. Pesticide storage and use must be consistent with California and Nevada water quality standards and TRPA thresholds.

The 208 Plan recognizes that antifouling substances painted on the hulls of boats, such as TBT, may contribute to water quality problems. California legislation in 1988 prohibited the use of TBT paints except on aluminum vessel hulls and vessels 25 meters or more in length. Vessels painted with TBT before January 1, 1988 may still be used, but may not be repainted with TBT so long as they comply with other applicable requirements. The USEPA has also banned the use of TBT on non-aluminum hulls of vessels less than 82 feet in length and has limited the release rate of TBT from other hulls to 0.4 $ug/cm^2/day$. [The “no detectable pesticides” water quality objective in this Basin Plan is probably more stringent than this effluent limitation.] Controls on antifouling coatings and boat and marina maintenance practices are necessary to protect Lake Tahoe from the addition of toxic substances from this source. The 208 Plan (Vol. I, page 158) provides that antifouling coatings shall be regulated in accordance with California and federal laws, by the Lahontan Regional Board and TRPA. The BMP Handbook incorporates the California and federal restrictions on use of paints containing TBT, and applies those restrictions to all portions of the Tahoe Region.

Additional monitoring of water, sediment, and biota should be done at other marinas within Lake Tahoe to determine the extent of TBT problems. TBT should

be considered an issue in permits for dredging at or near marinas, and for dredged material disposal.

The 208 Plan's BMP Handbook does not contain specific practices for pesticides other than antifouling coatings. (The use of native and adapted plant species, which are listed in the BMP Handbook, for landscaping and revegetation may reduce the need for pesticide use on landscaping in the Tahoe Basin.) TRPA should consider developing or incorporating more specific management practices to prevent significant water quality impacts from other types of pesticide use.

Atmospheric Deposition

As noted in Chapter 4 of this Basin Plan, wet and dry atmospheric deposition of nutrients and acids onto surface waters is an issue of concern throughout the Sierra Nevada. Atmospheric deposition is considered a significant part of the nitrogen budget of Lake Tahoe. Precipitation chemistry in the Lake Tahoe Basin has been monitored on an ongoing basis since the early 1980s. Direct wet and dry deposition on the Lake have also been studied by the University of California Tahoe Research Group. The relative importance of long distance transportation of nitrogen oxides from outside of the Lake Tahoe Basin and of nitrogen oxides from vehicle and space heater emissions within the Basin has not been conclusively established. Atmospheric nutrients are important considerations for Lake Tahoe because of the lake's large surface area in relation to the size of its watershed, and the long residence time of lake waters (about 700 years).

The Tahoe Regional Planning Agency has adopted a regional “environmental threshold carrying capacity” standard to reduce annual “vehicle miles traveled” (VMT) within the Lake Tahoe Basin by 10% from the 1981 level in order to reduce nitrogen oxide emissions and consequent atmospheric deposition to the Lake. The 208 Plan (TRPA 1988), outlines control measures to be implemented by TRPA and local governments to reduce atmospheric nutrient deposition. These include increased and improved mass transit; redevelopment, consolidation, and redirection of land uses to make transportation systems more efficient; controls on combustion heaters and other stationary sources of air pollution; protection of vegetation, soils, and the duff layer, and controls on offroad vehicles to control suspension of nutrient-laden dust. In order to reduce transport of airborne nutrients from upwind areas, the 208 Plan commits TRPA to work with California legislators “to encourage additional research into the generation and transport of nitrogen compounds, to require regular reports on the subject from the CARB [California Air Resources Board] and to provide incentives or disincentives to control known sources of NOx emissions upwind from the Tahoe Region. TRPA shall actively participate in the review and comment on draft air quality control plans from upwind areas to encourage additional NOx control measures.” TRPA is also committed to further monitoring of the nature and extent of transport of airborne nutrients into the Tahoe Region.

Regional Board staff should continue to review reports on atmospheric deposition in the Lake Tahoe Basin, long-distance transport of airborne pollutants to the Basin, and impacts of acid deposition on beneficial uses of Tahoe Basin waters. Where data gaps exist, additional monitoring and research should be encouraged. The results of ongoing CARB-sponsored research on acid deposition impacts elsewhere in the Sierra Nevada should be useful in evaluating data from the Lake Tahoe Basin.